

ARM MUSCLES EXPLOSIVE POWER TO INCREASE DISCUS THROW SKILL

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ABSTRACT

The purpose of the study is to find out the relationship among arm muscles explosive power, body core flexibility, achievement motivation and discus throw skill. In this case, the samples totaled 50 students from study program of physical education, faculty of pedagogy and science education "Syiah Kuala" University involving 100 (male) students selected by simple random sampling technique. This research using survey method, quantitative approach and correlational technique. The research concludes (1) it has positive relationship between arm power explosive power and discus throw skill (2) it has relationship significantly between body core flexibility and discus throw skill. (3) the relationship is positive between motivation and discus throw skill, (4) it has positive relationship among arm muscles explosive power, achievement motivation and discus throw skill.

Keywords: *explosive; flexibility; motivation and discus.*

Discus Throw is one of the athletics branches that has been included as curriculum from Elementary School to University. The lesson of Physical Education particularly athletics lesson is driven to excel of basic movement skill in theory and practice. Physical Education of discus throw is one of the throw collections in athletics branch which needs throw skill. For students of Physical Education, the lecture of athletics is comprised to be 2 (two) semesters such as basic athletics and intermediate athletics. The students who follow and pass the athletic lecture, excel the theory and all branches of athletics that consist of running, jumping and throw, as well as the discus throw.

The term of competency or skilled excellence generally is used to describe the different levels of someone's capability. It pertains due to every athletics branch that possesses specialty to perform sequences movements to certain sport branch which comprises: equipped tools that relate to size, shape and aerodynamic quality of excellence skill. The throw specialty or throw particularization (in javelin throw, discus throw, shot put) has different ways that ends with the same goal that is to measure the farthest distance of a landed tool. The farthest throw describes the individual's throw skill level.

Concerning on the movement skill, Gardner (1995:2) explained that the body-kinesthetic intelligence is one of the seven intelligences that belongs to every human. This intelligence comprises on physical skill that specifies to coordination, balance, agility, strength, flexibility and speed, proprioceptive capacities, tactility, haptic.

According to Singer (1985) excellence skill refers to the degree of success that aims to effective and efficient goal which determined by speed, accuracy, and the

form of adaptation skill. Jansen and Fisher (1979) defined the skill in more detail, they described the skill when utilizing the right muscles with the right force to perform the targeted movement in the right arrangement and timing.

Excellence skill can be comprehended as an indicator of capability level. The Excellency of motoric skill is a process that an individual needs to develop the responsive attributes into coordinated, organized and integrated movement. According to Lutan (1988) an excellence skill is an indicator of Excellency level that's why the skill is defined as an individual's performing competency to implement the duty that relates to expected goal. The higher of individual's capability to reach the goal, the more excellent the individual will perform. Performing the discus throw skill involves the power and speed or arm muscle explosive power, flexibility and achievement motivation.

Furthermore, regarding the stage in learning of movement skill, Fitts and Ponser explained as written by Joyce (2004) divided the stages in learning of movement skill into three phases, namely: 1) cognitive phase, 2) associative phase and 3) automatization phase. Cognitive phase is a phase to distribute information regarding movement concept or any form of skill that will be learned. The cognitive characteristic is often specified as the form of planning, hypothesis formulation and formulation of steps-by-steps movement, from input output, along with the process of the sequences unity of information process. A decided behaviour obviously happens in every cognitive stage or beginning stage at movement learning skill. In this stage, the students receive the information regarding movement process, then form the comprehension on their memory. The explanation can be also the speech with the stimulating target i.e. the sense of listening or demonstration with the stimulating target i.e. the sense of visibility so the information can be easily accessed and comprehended, the explanation must be simple and organized well.

An associated phase is when the students are given an opportunity to try repeating movement concept that well understood in practice. The exercise formation at this phase has characteristic: simple exercise formation with slowly motion with possibility of lots of correction. The main target of the associated phase is the movement skill that can be well performed through low intensity. Therefore, the practical movement formation must lead to the right concept, started from holding, swinging, stepping, rotating and throwing. If the mistake happens, the correction must be prioritized until the movement formation is well achieved. Obviously, at the associated phase, the students will seek the adjustment between how to perform with the resulted achievement. At this phase, certainly the students' behaviour has not formed a consistent pattern.

An automatization phase is a phase, which the movement skill that been brushed up priorly, is repeated continuously so the motoric response will be accurate, fast and precise and the movements will not be obstructed by the situation and environment condition. An automatization phase is marked by the implementation of movement coordination that is more effective and efficient. The exercise characteristic are quantity and quality of exercise that increase, with less correction, the exercise intensity is high along with the lessen of difficulty. The mentor or trainer often carries with haste and directly moves to automatization phase meanwhile the movement concept has not yet excelled correctly. If the movement formation is still inaccurate, notwithstanding it has been learned many times as a result the movement

will become bad habit automatically so when comes the correction, it will definitely meet the obstacles and need lots time to be corrected.

Throwing discus, the dominant element is the arm muscle explosive power, is the combination of power and speed. Explosive power in Bahasa Indonesia translation meaning daya ledak. Bompa (1999) defined explosive power as the product of two abilities namely strength and speed to perform maximum force in faster timing.

Meanwhile Jonath and Krampel defined explosive power as the combination ability between power and speed of highly contracted muscles. Explosive power is the ability which exists between power and speed in maximum movement. It tends to move more directly to the movement speed or to maximum power direction that depends on the weight/obstacle. Explosive power as combination ability of power with speed which created in the form of muscle ability to overcome the weight with its highly contracted muscles.

Explosive power as the combination ability with the concreted speed in the form of muscle ability at the same time when performing the throw. Started from holding, swinging, pivoting $1\frac{1}{2}$ circle, stepping and reversing the body following discus swing (IAAF, 1993) until throwing explosively (fast and powerful). At the same time, muscles assemblage and joints (ankle, knee, spine, elbow and shoulder) overcome the weight with the highly contracted speed. Evaluating the form and kind of movement when performing discus throw can be seen not only from the arm muscle explosive power but also from flexibility involvement. Meanwhile, motivation of achievement also determines the skill, the possibility of loss or difficulty in discus throw.

Despite arm muscle explosive power, body flexibility also becomes the main factor to discus throw, the flexibility of body core also gives important role when swinging the discus, pivoting feet, arm-swinging to release a throw. Lack of flexibility will affect the support of power pressure, and the movement speed that affects the performance and the result to release. Pate (1993:301) expressed that the flexibility is the limitation range of maximal movement that possibly be performed on a joint or series of joints.

Flexibility is one of the components of physical condition which ease an individual to performs many movements which involves the body joints over the body such as ankle, knee, fingers, elbow, shoulder, spine, hip to nape of neck.

According to Burton, the flexibility is defined as the range of motion of certain joints (Maud & Cortez-Cooper, 1995). The flexibility of body core is one of the physical components which holds important function in daily activities. To perform bending, lifting, up-and-down reaching, left, right side of body stretching, folding also body rotating can move plially, smoothly and not stiffly. Flexibility as one of the important factors to discus throw particularly when swinging and throwing that directly relates to extensive joints movement, easier movement and not stiff. Flexibility as one of capability level that the joints must perform to certain move.

Every individual must have flexibility along with the joints form that basically are same, however due to age development, body weight, and kind of activities that result the different flexibility. Flexibility, at early child and teenager, shows best result compared with the elder's flexibility who lacks for exercise. Every individual shows different quality of flexibility, according to Nossek (1982). Well-formed flexibility performs the muscle and muscles combination to contract by involving locomotor body system locomotor that working together to perform a movement.

Flexibility relates to the ability of joints movement such as hip when bending, shoulder joints, and spine, joints on the arm and foot and spine or on trunk, ankles of foot and arm.

Flexibility is the ability to utilize the width of body swing of the joints at maximum when the movement swing, the joints must be trained of all angles that possibly adjusted with the human anatomy body. Individual's Flexibility Quality differs from one another, well-formed flexibility performs the muscle and muscles combination to contract by involving body system locomotor that working together to perform a movement activity.

Flexibility is determined by the certain joints structure which involves ligament around the joints. The layers of ligament form unity of muscles structure that function as connection between tendon and bones. In line with the several theories of flexibility above, Singer added that flexibility is a range of joints movement. On the tips of the joint, the layers of flat broad tendons that extend the muscle flexibility, that is physical characteristic of muscles elasticity components that accelerate and determine the flexibility of muscles power.

The flexibility of body core is an important factor for a thrower, particularly when swinging and rotating 1½ circle and when swinging to throwing the discus. It can be performed perfectly if the thrower has a good flexibility of body core. That's why, the flexibility factor is very important as one of variable to improve discus throw skill.

Motivation is an encouragement in someone's mind that consciously or unconsciously appear to perform any action with certain purpose. Moreover, speaking of evaluation of motivation definition from expertises that can be formulated as an integrated definition that motivation is a actualization process of internal motion generator inside an individual to result activity, to secure the sustainability and to determine the direction or stream in order to achieve targeted goal.

Motivation is an urge or a willingness that bases the appearance of behaviour. Motivation to physical exercise is affected by internal and external factors. According Husdarta (2010) internal factor consists of (a) athlete charisma, (b) education, (c) past experience, (d) dream and expectation. Meanwhile external factor comprises (a) available facility, (b) facilities/vehicle and infrastructure, (c) training method, (d) training program, (e) environment or climate of mentoring.

How major or minus the willingness determines motivation which urges an individual to perform an action. Sport is an activity, motivation that becomes one of the successful factor to achieve a skill. By high motivating, the sources can be either from inside or outside of an individual, it can boost the skill that being trained and improved compared to those who do not have any motivation.

By motivation, Sportsman will be encouraged to perform better disciple, serious-minded and determined. Motivation can develop well if it is supported by many factors namely from family, friends or environment. According to Donald as quoted by Wasty (1990) stated that motivation is the power change inherently from an individual or character which signed by effective urges and individual's effort reactions to reach the goal. Motivation is a change that can be sourced from family that can be done by fulfilling the needs, started from giving a support through constructive communication and fulfilling secondary needs, tertiary needs such as clothes and sport equipment in order to perform the sport.

Discus throw is one of athletics branches which always be competed in any championship so it will become challenge for athletes because it needs either strong stamina but also huge motivation and determination when performing the throw with explosive energy release which combined with the power and speed to result the throw at farthest distance.

Relating to motivation, Drowatzsky expressed that motivation is a power to behaviour which is used to identify behaviour to learning facility, change and other clues. Based on several definitions above, it is believed that arm muscles explosive power is a huge contribution compared with body core flexibility and achievement motivation in discus throw skill.

METHOD

This research is using qualitative approach, the method of survey and correlational. By giving 50 samples of students who passed athletics lecture. Data collection was conducted with assessment and measurement. Score of discus throw skill was obtained through observation of 2 (two) experts who fulfilled with IAAF regulation. Score of arm muscles explosive power was obtained by using medicine ball, and body core flexibility was obtained by sit and reach test with centimeter (cm), achievement motivation score was obtained through respondent statement. For further explanation, the correlation and variables significance; arm muscles explosive power (X_1), body core flexibility (X_2) and achievement motivation also variables of discus throw skill (Y) are analyzed simultaneously. Furthermore conducting validation test, reliability, normalities and data homogeneity after fulfilling the requirements, it began with the hypothesis.

The calculation result of validation of discus throw skill was obtained $\Gamma_{\text{compute}} = 0.868$ meanwhile Γ_{table} $n=30$ and $\alpha = 0.05$ is 0.361 which means $\Gamma_{\text{compute}} > \Gamma_{\text{table}}$ defining that the data of discus throw skill was valid. Furthermore, the calculation result of test reliability of discus throw skill that was the quadrat total among respondents = 45,68, quadrat total of residual = 4,48333 the conclusion $r = 0.902$ so the reliability was high. Based on the test validation result and reliability, it expressed that the measurement instrument of discus throw skill which developed by a researcher could be used to measure discus throw skill.

Instrument validity of arm muscles explosive power could be content validity by considering logics to measuring arm muscles explosive power. Using Pearson's formula, it was obtained that $\Gamma_{\text{compute}} = 0.868$ meanwhile Γ_{table} for $n = 30$ is 0.361 meaning $\Gamma_{\text{compute}} > \Gamma_{\text{table}}$ as a result the data was valid. The test result of instrument reliability, the research used the test of Anava Hyot $r=0.812$. The numerical number was valid showing that the instrument had the high level of reliability to measure arm muscle explosive power.

The instrument validity of body core flexibility was content validity. To measure the score of body core flexibility using sit and reach test that has been standard in centimeter (cm). Validity test used Pearson formula that showing $\Gamma_{\text{compute}} = 0.807$ meanwhile Γ_{table} for $n = 30$ was 0.361 meaning $\Gamma_{\text{compute}} > \Gamma_{\text{table}}$ as a result the data was valid.

The test result of instrument reliability of the research used the test of Anava Hyot $r = 0.893$. The numerical number was meaningful showing that the instrument had the high level of reliability to measure body core flexibility of discus throw.

Furthermore, the test result of instrument validation of achievement motivation used Pearson formula that showing $r_{\text{compute}} = 0.942$ meanwhile r_{table} for $n = 30$ was 0.361 meaning $r_{\text{compute}} > r_{\text{table}}$ as a result the data was valid. The test result of instrument reliability of the research used the test of Anava Hyot $r = 0.961$. The statical relationship was said to exist in this case showing that the instrument had the high level of reliability and could be used as an instrument which measured the achievement motivation on discus throw skill after the validation and reliability test were accomplished then could be followed to the test of normality and homogeneity.

RESULTS

Based on the analysis result of simple linier regression between arm muscle explosive powers with discus throw skill, it concluded (a) amounting 22.35 and regression coefficient (b) amounting 0.0553. Therefore the correlation between variable of arm muscle explosive power with discus throw skill was obtained the similarity $\hat{Y} = 22.35 + 0.553X_1$. It has been used priorly to predict, the regression similarity must fulfill the requirement of linearity criteria and reliability. To find out the degree of linearity and reliability of the similarity needed F test as well contained on Table 1 and Table 2, as follows:

Table 1. Significance Test and Variance Analysis of Linearity (ANAVA)

$$Y = 22.35 + 0.553X_1$$

Sources Variance	df	Q	ANQ	F_{compute}	F_{table}	
					$\alpha = 0,05$	$\alpha = 0,05$
Total (T)	0	129958,00				
Reg (a)	1	125000,00				
Reg (b/a)	1	1250,15	1250,15	16,18**	0,04	7,19
Remaining	48	3707,8	77,24			
Tuna Cocok	27	2263,42	83,83	1,21 ^{ns}	2,05	2.80
Galat	21	1444,43	68,78			

Information:

df= degrees of freedom; Q=Number of Quadrats; ANQ: the Average Number of Quadrats.

**Regression is very significant on $\alpha = 0,05$

Table 2. Significance Test of Partial Coefficient and correlation between arm muscle explosive power, flexibility of body core, achievement motivation with discus throw skill

Total of Observation (n)	Correlation Symbol	Coefficient correlation	Contribution Variance	t_{compute}	t_{table}	
					$\alpha = 0,05$	$\alpha = 0,01$
50	ry1.2.3	0,509	30,34%	4,01**	1,677	2,010
50	ry2.1.3	0,474	30,4 %	3,65**	1,667	2,010
50	ry3.1.2	0,477	29,8%	3,68**	1,667	2,010
50	ry123	0,779	89,46%	23,65**	1,667	2,010

The table above, it was obtained that the information of testing result of regression reliability expressed r_{compute} was 16.18 greater than F_{table} that was 0.04.

Therefore, it can be concluded that the regression similarity $\hat{Y} = 22.35 + 0.553X_1$ that showed paired data of discus throw skill (Y) with arm muscle explosive power (X_1) was significant (which meant that the degree $\alpha = 0.05$). Meanwhile the test result of regression linearity was obtained $F_{\text{calculate}} 1.21$ was smaller than F_{table} by 2.05. Therefore, it can be concluded that the correlation between paired data, discus throw skill with arm muscle explosive power was linear.

In line with the analysis result of research data, it can be said that the discus throw skill has linear correlation with arm muscle explosive power. Therefore if the score of arm muscle explosive power increases, it will be followed by the increase score of discus throw skill. It shows that every upscale of one score of arm muscle explosive power (X_1) will cause the increase of 0.553 score of discus throw skill (Y) on constants 22.35.

First Hypothesis was "there is a correlation between arm muscle explosive power and discus throw skill". Based on the analysis result of simple linear regression between variable of arm muscle explosive power resulted constants (a) was 22.35 and regression coefficient (b) was 0.0553. Thus, the correlation between variable of arm muscle explosive power increased which followed by the increase of score of discus throw skill thus it can be expressed regression similarity $\hat{Y} = 22.35 + 0.553X_1$. Priorly it was used to predict regression similarity, it must meet the requirement of linearity and reliability. To find out the linearity and reliability, the similarity can be conducted the test of F.

Test result of regression reliability showed r_{compute} was 16.18 greater than F_{table} that was 0.04. It can be concluded that the regression similarity expressed by $\hat{Y} = 22.35 + 0.553X_1$, paired data of discus throw skill (Y) with arm muscle explosive power (X_1) was significant with the degree $\alpha = 0.05$. On the test of linearity showed that r_{compute} was 1.21 smaller than F_{table} by 2.05. Therefore $t_{\text{compute}} = 4.57 > t_{\text{table}} = 1.68$. As the result, the coefficient and correlation was significant and it showed the strong relationship.

Second Hypothesis "there is positive connection between body core flexibility with discus throw skill". Based on analysis result of simple linear regression between variables of flexibility of body core with discus arm skill results constants (a) of 22.50 and regression coefficient (b) of 0.0550. Therefore, the relationship between variable of arm muscle explosive power increased which would be followed by the increase of score of discus arm skill that showing regression similarity $\hat{Y} = 22.50 + 0.550X_2$. Priorly it has been used to predict regression similarity, it must meet the requirement of linearity and reliability. To find out the degree of linearity and reliability, the similarity can be conducted the test of F.

The result test of regression reliability was obtained from r_{compute} of 15.15 was greater than F_{table} of 4.04. It could be concluded that the regression similarity of $\hat{Y} = 22.50 + 0.550X_1$ taken data from discus arm skill (Y) and flexibility of body core (X_2) showing significance on degree $\alpha = 0.05$. In the test result of linearity, r_{compute} showed 1.13 which smaller than F_{table} of 2.02. Thus, it could be concluded that relationship between data of discus arm skill and flexibility of body core was linear.

The result test of correlation reliability of discus arm skill (Y) with flexibility of body core (X_2) showed that $t_{\text{compute}} = 4.58 > t_{\text{table}} = 1.677$. As a result the coefficient correlation showed significance and had strong relationship. The result test in detail can be seen on table 2 as follows:

Based on the test of reliability correlation between paired scores of discus arm skill (Y) and arm muscle explosive power (X_1) as written on table 4.9 above showing $t_{compute} = 4.57 > t_{table} = 1.68$. It concluded that correlation coefficient was significant. In other words, H_0 explained that no relationship between discus arm skill and arm muscle explosive power which strongly rejected, conversely the consequence of H_1 was accepted. This finding concluded that there was positive relationship between arm muscle explosive power and discus throw skill which meant the more increase of arm muscle explosive power, the more improved of discus throw skill. For further explanation regarding correlation significance with other variables can be seen from table below.

The result test of correlation coefficient significance was obtained from $F_{compute} = 23.65$ and value F_{table} on $\alpha = 0.05$ is 2.79 concluding that correlation coefficient between arm muscle explosive power, flexibility of body core and achievement motivation with and discus throw skill possessed correlation (r_{123}) = 0.779 which had significant result.

DISCUSSIONS

Based on the test result of hypothesis, it was found that arm muscle explosive power had positive and significant relationship with the discus arm skill. The calculation result showed that the statically number of coefficient and correlation was 0.553 with contribution of 30.34% which could be explained through regression similarity of $Y = 22.35 + 0.553X_1$. This finding gave explanation that the more increase of arm muscle explosive power, the more improved discus arm skill.

There was significant relationship between arm muscle explosive power and discus arm skill, basically it could be comprehended from arm motoric function to release discus. Arm muscle explosive power as part of the manifestation of arm muscle power that formed from group of muscles to hold the weight at maximal. Arm muscle explosive power will give a boost to release at the shortest time.

In line with the result test of the hypothesis among discus throw skill, arm muscle explosive power, the flexibility of body core and achievement motivation that was conducted separately and it can be defined as follows:

Firstly, there is a positive relationship among variables of arm muscle explosive power with discus throw skill that contains the definition "the more increase of arm muscle explosive power, the more improved of discus throw skill. The strong relationship of paired variables describes that arm muscle explosive power contributes discus throw skill by 0.3034. This result expresses that 30.34% of variable skill of discus throw skill is affected by arm muscle explosive power, in other words arm muscle explosive power supports discus throw skill. Through regression model of $Y = 22.35 + 0.553$ significantly shows that arm muscle explosive power contributes and determines variable of discus throw skill. Notwithstanding, the result finding of reliability or significance empirically proves that arm muscle explosive power determines discus arm skill.

Secondly, regarding the relationship of flexibility of body core with discus arm skill, there is a positive relationship between variable of flexibility of body core arm muscle explosive power with discus arm skill which contains other words the more increase of flexibility of body core, the more improved of discus arm skill. The

strong relationship seen from paired variables describing flexibility of body core gives huge contribution of $\hat{Y} = 22.50 + 0.550X_2$ of discus throw skill. It shows that flexibility of body core supports discus throw skill. Through regression model of $\hat{Y} = 22.50 + 0.550$ shows that flexibility of body core contributes of 0.304 or 30.4% and also determines variety of discus arm skill. However, the result finding of reliability or significance empirically proves that flexibility of body core also determines variety of discus throw skill.

Thirdly, regarding the relationship between achievement motivations with discus throw skill, there is a positive relationship between achievement motivation with discus throw skill which means the more increase of achievement motivation, the more improved of discus arm skill. The strong relationship seen from paired variables describing achievement motivation give great contribution to discus throw skill. It is obtained the determination coefficient of 0.298. It shows 29.8% of variety of discus throw skill is supported by achievement motivation. Through regression model of $\hat{Y} = 22.35 + 0.551$ shows that achievement motivation contributes and determines variety of discus arm skill.

Fourthly, regarding the relationship among arm muscle explosive power, the flexibility of body core, achievement motivation with the discus throw skill. Among the three predictor variables and response variable certainly have positive relationship with the power. It pertains that the higher percentages of arm muscle explosive power, the flexibility of body core and achievement motivation, the higher scale of discus throw muscle skill. By calculating the determination coefficient, then arm muscle explosive power, the flexibility of body core and achievement motivation result contribution to discus arm skill of 89.46% meanwhile 10.54% of the remaining is contributed by other factors. It shows that arm muscle explosive power, the flexibility of body core and achievement motivation can give significant result on discus throw skill. In other words, arm muscle explosive power, the flexibility of body core and achievement motivation can be increased continuously to reach higher result of discus arm skill.

Through model of $\hat{Y} = -5.407 + 0.388X_1 + 0.357X_2 + 0.367X_3$ on analysis of double regression shows that arm muscle explosive power, flexibility of body core and achievement motivation have positive relationship with discus arm skill. The result finding describes an interpretation that the more increase of arm muscle explosive power, flexibility of body core and achievement motivation, the more increase of discus throw skill of an individual. This finding shows that in order to improve discus throw skill, the student needs to pay attention on the improvement of arm muscle explosive power, the flexibility of body core and achievement motivation.

CONCLUSION

Coefficient and Correlation describes that the relationship between arm muscle explosive powers with discus throw arm is 0.551 within the scale between intervals 0.40 - < 0.70 which shows strong relationship meaning the higher arm muscle explosive power the higher level of discus throw skill. In spite of coefficient and correlation, it is also obtained that determination coefficient shows 0.3034, this result means that 30.34% variety of discus throw skill can be explained by arm muscle

explosive power. Giving description that if arm muscle explosive power increases, the discus throw skill will show satisfactory result and vice versa.

The calculation result of coefficient and correlation shows that the relationship of body core flexibility with discus arm skill is 0.550 within the scale between intervals 0.40 - < 0.70 which shows strong relationship. Despite coefficient and correlation, coefficient determination shows 0.3025 describing 30.25% of variety of discus arm skill can be expressed by body core. This finding gives conclusion that the more flexibility of body core, the better arm discus skill, conversely if the score of body core flexibility shows lower result, the discus arm skill will give worse result as well.

At some points, the body core flexibility as an integral part of individual's physical condition to contribute in discus arm skill. The flexibility of body core has correlated with the skill which needs to harmonize the body movement because its quality will keep the balance of body when performing swinging, pivoting and throwing. Thus, the improvement and achievement of discus arm skill can be elevated through the increase of arm muscle explosive power, the flexibility of body core, and achievement motivation. The improvement can be conducted by personally and working together as team to reach the goal on discus throw branch of students of 'penjaskesrek' study program.

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